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Marshall Space Flight Center



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Expandable Coating Cocoon Leak Detection System

A new leak detection method involves wrapping a Parafilm tape over a connection or weld and then coating the tape with a sealing compound. If a leak is present, the coating and tape will blister or bubble. The tape and coating solution are applied according to the following procedure: (1) A strip of Parafilm tape is pulled tightly against the tubing at one edge of the separable connector at least 2 mm beyond threads, insert, or nut. (2) The short end of the tape is pulled tightly against the tube, and then it is folded toward the nut. The first wrap of the tape covers this short end. (3) The tape is wrapped around nut and threads and pulled tightly into a helical pattern with at least 3-mm overlap for each turn. (4) The tape is pulled tightly as it makes the transition between nut and thread diameter. The tape is terminated at a distance 3-4 mm beyond the last thread or insert. Termination is accomplished by stretching the Parafilm tape and breaking it at the tube. (5) The Parafilm tape wrap is now inspected to insure that a complete "mummy wrap" exists with no voids.

Void volume within the Parafilm tape wrap must be minimized. To do this, the bundle of elastic threads is wrapped around the fitting at threads, inserts, bridges, or any place where the film is not in close contact with the hardware. The tape is again inspected to insure that there is a complete, void-free envelope. A smooth brush coat of a coating solution is applied over the Parafilm tape, extending 2-3 mm onto the tubing or fitting. After a two to three hour dry, a second brush coat of solution

is applied. After the coating has dried 12 to 16 hours, it should be inspected to insure that complete coverage has been obtained and to insure that the edges of the Parafilm tape have been sealed by the coating. During or after system pressurization, the expanded bubble is inspected by both sight and touch. If the bubble is not obvious, a finger can discern whether the film has lifted from the hex nut of the separable connector.

Note:

Requests for further information may be directed to:

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Patent status:

Inquiries about obtaining patent rights for the commercial use of this invention may be made to:

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